

- (51) **Int. Cl.**
- | | | |
|--------------------|-----------|--|
| <i>G06F 1/16</i> | (2006.01) | |
| <i>G06F 3/0488</i> | (2013.01) | |
| <i>G06F 9/44</i> | (2006.01) | |
| <i>G06F 3/0481</i> | (2013.01) | |
| <i>G06F 3/0483</i> | (2013.01) | |
| <i>G06F 3/14</i> | (2006.01) | |
| <i>G09G 5/14</i> | (2006.01) | |
| <i>B29D 11/00</i> | (2006.01) | |
| <i>E05D 3/12</i> | (2006.01) | |
| <i>F21V 8/00</i> | (2006.01) | |
| <i>G06F 3/01</i> | (2006.01) | |
| <i>G06F 3/041</i> | (2006.01) | |
| <i>G06F 3/048</i> | (2013.01) | |
| <i>G06F 3/0489</i> | (2013.01) | |
| <i>G06T 3/00</i> | (2006.01) | |
| <i>G09G 1/00</i> | (2006.01) | |
| <i>G09G 5/34</i> | (2006.01) | |
| <i>H04M 1/02</i> | (2006.01) | |
| <i>H04N 5/445</i> | (2011.01) | |
| <i>H04W 72/06</i> | (2009.01) | |
| <i>H04W 88/06</i> | (2009.01) | |
| <i>H05K 5/00</i> | (2006.01) | |
| <i>H05K 5/02</i> | (2006.01) | |
| <i>H05K 5/04</i> | (2006.01) | |
| <i>H05K 7/02</i> | (2006.01) | |
| <i>H05K 7/14</i> | (2006.01) | |
| <i>H05K 13/00</i> | (2006.01) | |
| <i>H05K 13/04</i> | (2006.01) | |
| <i>G06F 3/00</i> | (2006.01) | |
| <i>G06F 3/0484</i> | (2013.01) | |
| <i>H04W 88/02</i> | (2009.01) | |
| <i>G06F 3/0482</i> | (2013.01) | |
| <i>G09G 5/12</i> | (2006.01) | |
| <i>G06F 3/0346</i> | (2013.01) | |
| <i>H04N 5/232</i> | (2006.01) | |
| <i>H04N 5/262</i> | (2006.01) | |
| <i>G06F 3/0486</i> | (2013.01) | |
| <i>G06F 3/0485</i> | (2013.01) | |
| <i>G06F 17/30</i> | (2006.01) | |
| <i>G06F 9/00</i> | (2006.01) | |
| <i>G06F 3/16</i> | (2006.01) | |
- (52) **U.S. Cl.**
- CPC *G06F3/01* (2013.01); *G06F 3/017* (2013.01); *G06F 3/0346* (2013.01); *G06F 3/041* (2013.01); *G06F 3/048* (2013.01); *G06F 3/0412* (2013.01); *G06F 3/0416* (2013.01); *G06F 3/0481* (2013.01); *G06F 3/0482* (2013.01); *G06F 3/0483* (2013.01); *G06F 3/0484* (2013.01); *G06F 3/0485* (2013.01); *G06F 3/0486* (2013.01); *G06F 3/0488* (2013.01); *G06F 3/04817* (2013.01); *G06F 3/04842* (2013.01); *G06F 3/04845* (2013.01); *G06F 3/04883* (2013.01); *G06F 3/04886* (2013.01); *G06F 3/04897* (2013.01); *G06F 3/1423* (2013.01); *G06F 3/1438* (2013.01); *G06F 3/1446* (2013.01); *G06F 3/167* (2013.01); *G06F 9/00* (2013.01); *G06F 9/44* (2013.01); *G06F 9/4443* (2013.01); *G06F 17/3028* (2013.01); *G06F 17/30274* (2013.01); *G06T 3/00* (2013.01); *G09G 1/00* (2013.01); *G09G 5/00* (2013.01); *G09G 5/12* (2013.01); *G09G 5/14* (2013.01); *G09G 5/34* (2013.01); *H04M 1/0216* (2013.01); *H04M 1/0266* (2013.01); *H04N 5/23293* (2013.01);
- H04N 5/2628* (2013.01); *H04N 5/44591* (2013.01); *H04W 72/06* (2013.01); *H04W 88/02* (2013.01); *H04W 88/06* (2013.01); *H05K 5/0017* (2013.01); *H05K 5/0226* (2013.01); *H05K 5/04* (2013.01); *H05K 7/02* (2013.01); *H05K 7/1452* (2013.01); *H05K 13/00* (2013.01); *H05K 13/046* (2013.01); *E05Y 2900/606* (2013.01); *G06F 1/16* (2013.01); *G06F 2203/04803* (2013.01); *G09G 2300/023* (2013.01); *G09G 2330/021* (2013.01); *G09G 2354/00* (2013.01); *Y10T 16/547* (2015.01); *Y10T 29/4984* (2015.01); *Y10T 29/49826* (2015.01)
- (56) **References Cited**
- U.S. PATENT DOCUMENTS
- | | | | |
|--------------|-----|---------|---|
| 5,564,002 | A | 10/1996 | Brown |
| 5,874,960 | A | 2/1999 | Mairs et al. |
| 5,889,517 | A | 3/1999 | Ueda et al. |
| 7,137,074 | B1 | 11/2006 | Newton et al. |
| 7,636,899 | B2 | 12/2009 | Purcell et al. |
| 7,681,143 | B2 | 3/2010 | Lindsay et al. |
| 7,739,604 | B1 | 6/2010 | Lyons et al. |
| 8,108,782 | B2 | 1/2012 | Rajpal et al. |
| 8,290,540 | B2 | 10/2012 | Kittel et al. |
| 8,300,022 | B2 | 10/2012 | Brenneman et al. |
| 8,385,057 | B2 | 2/2013 | Liu et al. |
| 8,423,911 | B2 | 4/2013 | Chaudhri |
| 8,665,215 | B2 | 3/2014 | Schrock et al. |
| 9,001,149 | B2 | 4/2015 | Sirpal et al. |
| 9,141,135 | B2 | 9/2015 | Sirpal et al. |
| 9,152,176 | B2 | 10/2015 | Gimpl et al. |
| 9,158,494 | B2 | 10/2015 | Sirpal et al. |
| 9,223,426 | B2 | 12/2015 | Sirpal et al. |
| 2002/0021278 | A1 | 2/2002 | Hinckley et al. |
| 2002/0089505 | A1 | 7/2002 | Ording |
| 2002/0140698 | A1 | 10/2002 | Robertson et al. |
| 2002/0140746 | A1 | 10/2002 | Gargi |
| 2004/0066408 | A1 | 4/2004 | Meyers et al. |
| 2004/0095401 | A1 | 5/2004 | Tomimori |
| 2006/0085384 | A1 | 4/2006 | Sato et al. |
| 2006/0161847 | A1 | 7/2006 | Holecsek et al. |
| 2006/0183505 | A1 | 8/2006 | Willrich |
| 2006/0190838 | A1 | 8/2006 | Nadamoto |
| 2007/0036346 | A1 | 2/2007 | Kwon |
| 2007/0048717 | A1 | 3/2007 | Hsieh |
| 2007/0234222 | A1 | 10/2007 | Yamaguchi et al. |
| 2008/0096593 | A1 | 4/2008 | Park |
| 2008/0111822 | A1 | 5/2008 | Horowitz et al. |
| 2008/0119237 | A1 | 5/2008 | Kim |
| 2008/0148152 | A1 | 6/2008 | Blinnikka et al. |
| 2008/0152297 | A1 | 6/2008 | Ubillos |
| 2008/0165152 | A1 | 7/2008 | Forstall et al. |
| 2008/0204424 | A1 | 8/2008 | Jin et al. |
| 2008/0307350 | A1 | 12/2008 | Sabatelli et al. |
| 2009/0061970 | A1* | 3/2009 | Wylie A63F 13/10
463/1 |
| 2009/0113330 | A1 | 4/2009 | Garrison et al. |
| 2009/0143141 | A1 | 6/2009 | Wells et al. |
| 2009/0177617 | A1 | 7/2009 | Lee |
| 2009/0199128 | A1 | 8/2009 | Matthews et al. |
| 2009/0204925 | A1 | 8/2009 | Bhat et al. |
| 2009/0278806 | A1 | 11/2009 | Duarte et al. |
| 2009/0298418 | A1 | 12/2009 | Michael et al. |
| 2009/0307623 | A1 | 12/2009 | Agarawala et al. |
| 2009/0319672 | A1 | 12/2009 | Reisman |
| 2010/0007603 | A1 | 1/2010 | Kirkup |
| 2010/0050111 | A1 | 2/2010 | Duffy |
| 2010/0064244 | A1 | 3/2010 | Kilpatrick, II et al. |
| 2010/0064536 | A1 | 3/2010 | Caskey et al. |
| 2010/0079355 | A1* | 4/2010 | Kilpatrick, II G06F 1/1616
345/1.3 |
| 2010/0081475 | A1 | 4/2010 | Chiang et al. |
| 2010/0085274 | A1 | 4/2010 | Kilpatrick, II et al. |